

CLAIMS

1.Composite concrete pavement with the surface course of normal concrete and subbase and/or lower layer of compressive and flexural strength of concrete which can be not less than that of surface course normal concrete with the same consumption of cement, specified compressive strength f_c' and modulus of rupture (MR) of subbase and lower layer concrete amount up to 5,000 and more than 750 psi, respectively, coarse aggregate of subbase and lower layer concrete defined as enriched limestone waste is processed by-product of manufacture of crushed limestone of regular Sizes number 56, 57, 6 and 67 with rated dimensions 25-9.5 mm, 25-4.75 mm, 19- 9.5 mm and 19-4.75 mm, respectively, physical properties of this coarse aggregate should be in accordance with requirements of ASTM C 33, thickness of surface course of composite pavement is determined by requirements for abrasion resistance, lower layer of pavement is monolithic with surface course, if flexural concrete strength of the surface course, subbase, and lower layer are the same, the equivalent normal concrete thickness of composite pavement should be close to its physical one.

2.Concrete of subbase and/or lower layer of composite concrete pavement of claim 1 of specified compressive strength f_c' and modulus of rupture (MR) up to 5,000 and more than 750 psi, respectively, with the coarse aggregate defined as enriched limestone waste which is processed by-product of manufacture of crushed limestone mainly of regular Sizes numbers 56, 57, 6, and 67 with the rated dimensions 25-9.5mm, 25-4.75 mm, 19-9.5mm, and 19-4.75mm, respectively, this by-product as a raw material for enrichment should be finer than 3/8 in.(9.5 mm) and coarser than 4.75mm (Sieve No.4), enrichment of this by-product can be carried out by washing or screening, or by a combination of washing and screening separately for parts finer and coarser than 4.75mm with consequent mixing of these parts or without this separation depending on the results of sieve analysis of this aggregate, amount of aggregate finer than 4.75 mm at quarry before enrichment should be at least the value of the same order as that of the least Size of coarse aggregate number 89 according to ASTM C 33 and not less than about 1/3 of the total weight of aggregate, the proportions between

the amounts of aggregate finer and coarser than 4.75mm before enrichment should be determined taking into account an inevitable breakdown of aggregate due to handling and transportation from quarry to the aggregate bin of a concrete plant, after enrichment of limestone waste the amount of aggregate finer than 2.36 mm (Sieve No.8) should not exceed about 10% of the total weight of aggregate, the amount of aggregate finer than 1.18mm (Sieve No. 16) should not exceed about 7 % of the total weight of aggregate, the amount of aggregate finer than 300 μ m Sieve No. 50) should not exceed about 2 % of the total weight of aggregate, after transportation of aggregate to concrete plant the amount of aggregate finer than 4.75 mm should be less than that of the largest Size of fine aggregate number 9 according to ASTM C33 and close to but not exceeding 2/3 of the total weight of aggregate, the amount of aggregate finer than 300 μ m (Sieve No.50) should not exceed about 3.0% of the total weight of aggregate, grading of enriched limestone waste after transportation to the aggregate bin of concrete plant should be finer than that for the least Size of coarse aggregate Number 89 and coarser than that for the largest Size of fine aggregate Number 9 according to ASTM C33 and can be considered as intermediate between the coarse and fine aggregates in Terminology of ASTM C125, physical properties of this coarse aggregate should be in accordance with requirements of ASTM C33, compressive strength of concrete should be higher than that for concrete of the same consumption of cement with crushed limestone of the Size Number 89 as a coarse aggregate and higher or at least close to that for concrete of the same consumption of cement and twice as high consumption of admixture with crushed granite of regular sizes as a coarse aggregate while the flexural strength of this concrete is higher than that for concrete of the same consumption of cement with crushed granite as a coarse aggregate, the values of the modulus of rupture (MR) of concrete equal to 550, 600, 650, 700, and 750psi correspond to the values of the specified compressive strength f_c' of this concrete equal to 3,000, 3,500, 4,000, 4,500, and 5,000 psi, respectively.